

## CLAIMS

### WHAT IS CLAIMED IS:

1. An RF radiating cable comprising:  
an inner conductor;  
a layer of foam dielectric material surrounding the inner conductor;  
a burst-resistant flame retardant layer longitudinally wrapped about the foam material;  
a metallic outer conductor wrapped about flame retardant material, the outer conductor having a plurality of apertures formed therein; and  
a jacket of weather-proofing material surrounding the outer conductor.
2. The cable according to claim 1 wherein the inner conductor is corrugated to provide flexibility.
3. The cable according to claim 1 wherein the inner conductor is a smooth-walled hollow structure.
4. The cable according to claim 1 wherein the foam material is extruded about the inner conductor.
5. The cable according to claim 1 wherein the foam material provides structural support and evenly spaces the outer conductor from the inner conductor in a coaxial arrangement.
6. The cable according to claim 1 wherein the burst-resistant flame retardant layer is longitudinally wrapped and has an overlap of about between five percent to fifty percent of its circumference.
7. The cable according to claim 1 wherein the burst-resistant flame retardant material includes an adhesive material to prevent unwrapping.
8. The cable according to claim 1 wherein the burst-resistant flame retardant layer substantially prevents the foam material from bubbling out through the apertures when heated.
9. The cable according to claim 1 wherein the burst-resistant flame retardant layer substantially prevents the foam material from bursting through the apertures in the outer conductor.
10. The cable according to claim 1 wherein the apertures are RF radiating apertures configured to emit RF signals.

11. The cable according to claim 1 wherein the apertures have a predetermined shape and spacing therebetween depending upon a frequency range of a signal carried by the cable.

12. The cable according to claim 1 wherein the apertures are pre-formed in the outer conductor before the outer conductor is applied to the foam layer.

13. The cable according to claim 1 wherein the apertures are in the form of slots evenly spaced along a length of the outer conductor.

14. The cable according to claim 1 wherein the apertures are U-shaped.

15. The cable according to claim 1 wherein the outer conductor is a metallic foil formed from a continuous strip.

16. The cable according to claim 1 wherein the outer conductor is longitudinally wrapped and has an overlap of about between five percent to fifty percent of its circumference.

17. The cable according to claim 1 wherein a string is wrapped about the outer conductor in a spiral manner after the outer conductor is formed around the flame retardant material and before the jacket is applied so as to retain the outer conductor in an overlapped configuration.

18. The cable according to claim 17 wherein the string is a KEVLAR string.

19. The cable according to claim 1 wherein the outer conductor is a continuous metal foil layer.

20. The cable according to claim 1 wherein the outer conductor is corrugated to provide flexibility.

21. The cable according to claim 1 wherein the outer conductor is a smooth-walled hollow structure.

22. An RF radiating cable comprising:

an inner conductor;

a layer of dielectric material surrounding the inner conductor;

a burst-resistant flame retardant layer of material cigarette-wrapped about the layer of dielectric material;

an outer conductor formed about flame retardant material, the outer conductor having a plurality of RF radiating apertures; and

a weather-proof jacket surrounding the outer conductor.

23. The cable according to claim 22 wherein the inner conductor is corrugated to provide flexibility.

24. The cable according to claim 22 wherein the inner conductor is a smooth-walled hollow structure.

25. The cable according to claim 22 wherein the burst-resistant flame retardant layer is longitudinally wrapped and has an overlap of about between five percent to fifty percent of its circumference.

26. The cable according to claim 22 wherein the burst-resistant flame retardant layer substantially prevents the foam material from bubbling out through the apertures when heated.

27. The cable according to claim 22 wherein the apertures are pre-formed in the outer conductor before the outer conductor is applied to the foam layer.

28. The cable according to claim 22 wherein the outer conductor is a metallic foil formed from a continuous strip.

29. The cable according to claim 22 wherein the outer conductor is corrugated to provide flexibility.

30. The cable according to claim 22 wherein the outer conductor is a smooth-walled hollow structure.

31. An antenna comprising:

an inner conductor;

a layer of insulating material formed about the inner conductor;

a burst-resistant flame retardant layer of material cigarette-wrapped about the insulating material;

an outer conductor formed about heat resistant material, the outer conductor having a plurality of RF radiating apertures; and

a water-tight protective jacket surrounding the outer conductor.

32. The antenna according to claim 31 wherein the inner conductor is corrugated to provide flexibility.

33. The antenna according to claim 31 wherein the inner conductor is a smooth-walled hollow structure.

34. The antenna according to claim 31 wherein the burst-resistant flame retardant layer is longitudinally wrapped and has an overlap of about between five percent to fifty percent of its circumference.

35. The antenna according to claim 31 wherein the burst-resistant flame retardant layer substantially prevents the foam material from bubbling out through the apertures when heated.

36. The antenna according to claim 31 wherein the apertures are pre-formed in the outer conductor before the outer conductor is applied to the foam layer.

37. The antenna according to claim 31 wherein the outer conductor is a metallic foil formed from a continuous strip.

38. The antenna according to claim 31 wherein the outer conductor is corrugated to provide flexibility.

39. The antenna according to claim 31 wherein the outer conductor is a smooth-walled hollow structure.

40. A flame resistant cable assembly comprising:  
an electrically conductive inner conductor surrounded with a layer of insulating material;  
a burst-resistant flame retardant barrier layer disposed in a longitudinal manner around the layer of insulating material;  
a layer of metallic foil formed about the flame retardant layer;  
a plurality of RF radiating slots formed at predetermined evenly spaced locations along a longitudinal axis of the metallic foil; and  
a weather proof protective layer surrounding the layer of metallic foil.

41. The cable assembly according to claim 40 wherein the inner conductor is corrugated to provide flexibility.

42. The cable assembly according to claim 40 wherein the inner conductor is a smooth-walled hollow structure.

43. The cable assembly according to claim 40 wherein the burst-resistant flame retardant layer is longitudinally wrapped and has an overlap of about between five percent to fifty percent of its circumference.

44. The cable assembly according to claim 40 wherein the burst-resistant flame retardant layer substantially prevents the foam material from bubbling out through the slots when heated.

45. The cable assembly according to claim 40 wherein the slots are pre-formed in the metallic foil before the metallic foil is applied to the insulating layer.

46. The cable assembly according to claim 40 wherein the metallic foil is formed from a continuous strip of material.

47. The cable assembly according to claim 40 wherein the metallic foil is corrugated to provide flexibility.

48. The cable assembly according to claim 40 wherein the metallic foil is a smooth-walled hollow structure.

49. A method of making an RF radiating cable comprising the steps of:  
providing an inner conductor;  
surrounding the inner conductor with a layer of foam dielectric material;  
longitudinally wrapping a layer of flame retardant material about the foam material along a longitudinal axis of the cable;  
applying a metal foil outer conductor about flame retardant material along the longitudinal axis of the cable, the outer foil having a plurality of apertures formed therein; and  
applying a layer of weather-proofing material formed about the outer conductor.

50. The method according to claim 49 including the step of corrugating the inner conductor to increase flexibility.

51. The cable according to claim 49 including the step of corrugating the outer conductor to increase flexibility.

52. A method of making an RF radiating cable comprising the steps of:  
providing a hollow tubular inner conductor;  
surrounding the inner conductor with a layer of foam dielectric material;  
longitudinally wrapping a burst-resistant layer of flame retardant material about the foam material along a longitudinal axis of the cable, the flame retardant material overlapping along a longitudinal axis;

applying a metal foil outer conductor about flame retardant material along the longitudinal axis of the cable, the outer foil having a plurality of apertures formed therein; and extruding a layer of weather-proofing material formed about the outer conductor.